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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

Applicant's or agent's file reference 62609B		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/US 03/31708	International filing date (day/month/year) 07.10.2003	Priority date (day/month/year) 07.10.2002	
International Patent Classification (IPC) or both national classification and IPC G02B6/44			
Applicant DOW GLOBAL TECHNOLOGIES INC. et al.			


- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 7 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 2 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 02.04.2004	Date of completion of this report 28.01.2005
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Albayrak, C Telephone No. +49 89 2399-7040



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/1708**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-15 as originally filed

Claims, Numbers

1-6 filed with telefax on 11.01.2005

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-6
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1-6
Industrial applicability (IA)	Yes: Claims	1-6
	No: Claims	

2. Citations and explanations

see separate sheet

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1. Reference is made to the following documents:

- D1: SILVA DA A L N ET AL: "RHEOLOGICAL AND THERMAL PROPERTIES OF BINARY BLENDS OF POLYPROPYLENE AND POLY(ETHYLENE-CO-1-OCTENE)" JOURNAL OF APPLIED POLYMER SCIENCE, JOHN WILEY AND SONS INC. NEW YORK, US, VOL. 79, NR. 9, PAGE(S) 1634-1639 , XP001180329 ISSN: 0021-8995
- D2: STRICKER: "m-PP Blends: Processing and Properties of Blends Based on m-PP and Ethylene Copolymers" KUNSTSTOFFE PLAST EUROPA, 1998, pages 17-19, XP009028138
- D3: MCKENNAGHAN: "Ethylene-1-octene Polyolefin Elastomers" KGK KAUTSCUK GUMMI KUNSTSTOFFE, vol. 54, no. 10, 2001, pages 540-545, XP000118033
- D6: EP-A-1 191 375 (CIT ALCATEL) 27 March 2002 (2002-03-27)
- D7: EP-A-1 085 358 (LUCENT TECHNOLOGIES INC) 21 March 2001 (2001-03-21)

A. Objections to a lack of clarity under Art. 6 PCT.

1. The applicant provides in the description a list of polymers which could, among others be used as the "impact modifying polymer" of claim 1, however ANY polymer would modify the impact parameters of polypropylene to some extent. Thus in determining which blends have the necessary features to carry out the invention as claimed, the person skilled in the art would have to perform these tests on *all* blends of polypropylene blended with at least *every polymer given in the description* and also *every other known polymer in varying amounts*. This work is not considered to fall under the term of, "nothing more than trial and error" and the functional definitions given in claims 1, 5 and 6 are thus not clear in the meaning of Art. 6 PCT.
2. It should be noted that it is irrelevant that the applicant has provided in the description some specific examples falling within the scope of the claim. The skilled person would be unable, from the wording of the claim alone, to determine which blends of which polymers could fall within the scope of claim 1 and which not.

3. It should also be noted that the scope of the claim appears to be much broader than is justified by the description, rendering the claim still further unclear. Since as noted above, the term, "impact modifying polymer" covers all polymers to some extent, the claim would appear to suggest that the addition of *any* polymer to high crystalline polypropylene would result in the impact properties defined in the claim, provided the person skilled in the art were to hit upon the correct ratio of polymer to polypropylene. There is, however, nothing in the description or in the available prior art to suggest that these properties can be obtained using anything other than ethylene/1-octene polyethylene copolymer.

B. Objections under Art. 33(3) to a lack of inventive step.

1. Document D1 discloses an extruded optical cable protective component comprising:
an extruded blend of
 - (a) a crystalline polypropylene, having a crystallinity of about 60% weight and a melt flow of from 1-20 grams per 10 minutes at 230°C (MFI of 2.1 g/ 10 min, see Table 1); and
 - (b) an impact modifying polymer (ethylene-1-octene copolymer (PEE)).The amount of PEE shown is 5-80% of the blend. This covers the range of PEE given in the examples on pages 11-13 of the description and thus can be assumed to contain the features of "being in amounts effective for providing.." the stated impact properties.
Hence the difference between the blend of D1 and one according to claim 1 is that the latter has a crystallinity of 65%. However, from the description of the present application it would appear that the impact properties of the blend may be obtained with any polypropylene having a crystallinity of greater than 56 %. There is no evidence in the description that a better or even different result would be achieved with a value of 65% and it must be concluded that this value is technically arbitrary. It follows that the subject matter of claim 1, as far as this claim could be understood, is not inventive with regard to the blend of D1.
2. The same arguments apply with regard to D2 which discloses an extruded blend of a crystalline polypropylene, having a crystallinity of greater than about 60% weight (the polypropylene of D2 is a Ziegler-Natta type whose crystallinity is typically 60% and a melt flow of from 1-20 grams per 10 minutes at 230°C (MFI of 4 g/ 10 min or 3 g/10 min, see Table 1); and an impact modifying polymer (ethylene-1-octene copolymer), in amounts of PEE of 0-20% wt. This covers the

range of PEE given in the examples on pages 11-13 of the description and thus can be assumed to contain the features of "being in amounts effective for providing.." the stated impact properties.

Hence, following the arguments laid out in paragraph 1 of this section, the subject matter of claim 1 is not inventive with regard to the blend of D2.

3. The same arguments apply for D3 which discloses an extruded blend of a crystalline polypropylene, having a crystallinity of greater than about 60% weight (the polypropylene of D3 is a Ziegler-Natta type whose crystallinity is typically 60% and a melt flow of from 1-20 grams per 10 minutes at 230°C (MFI of 8 g/ 10 min see Experimental); and an impact modifying polymer (ethylene-1-octene copolymer), in amounts of PEE of 18% wt. This is in the range of PEE given in the examples on pages 11-13 of the description and thus can be assumed to contain the features of "being in amounts effective for providing.." the stated impact properties.

Hence, following the arguments laid out in paragraphs 2 and 3 of this section, the subject matter of claim 1 is not inventive with regard to the blend of D3.

4. Claims 3 and 4 do not appear to include any further technical features which could further distinguish their subject matter over the blends of any of D1 or D2 or D3 and it follows further that the blends of any of D1, D2 and D3 must have the same polar functionality and shrinkage properties as those described in the claims. Hence it appears that the subject matter of claims 3 and 4 also do not involve an inventive step in the meaning of Art. 33(3) PCT.

5. Claim 6 does not appear to contain any further technical features which could form the basis of an inventive step over the blends of D1, D2 or D3.

6.

- (i) D6 discloses an optical fibre cable (abstract) comprising an extruded optical cable protective component comprising an extruded blend of impact modified polypropylene (paragraphs 22, 24, 28).

D7 discloses an optical fibre cable (abstract) comprising an extruded optical cable protective component comprising an extruded blend of impact modified polypropylene (paragraph 68).

- (ii) Hence the difference between the devices of D7 and D6 and one according to claim 5 is that the latter uses a specific blend of polypropylene and PEE as the

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impact modifying polymer.

- (iii) Hence the objective technical problem appears to be, "which impact modifying polymer in which amounts?"
 - (iv) The person skilled in the art knows from D2 that a sudden leap in impact strength occurs between 15-20% vol of ethylene 1-octene copolymer content, using the blend described in this document. It would thus be obvious to him to use the blend of D2 in the devices of either of D6 or D7 and thereby arrive directly at a device differing from one according to claim 5 only in the amount of crystallinity of the polypropylene. However, as noted above, there is nothing in the description of the present application to suggest that the use of a 65% crystalline polypropylene would have a different technical effect to ones of 60%. Hence it follows that the value of 65% in the claim is technically irrelevant and cannot form the basis of an argument for the presence of inventive step in the subject matter of claim 5.
 - (v) It follows that the subject matter of claim 5 is rendered obvious by either of D6 or D7 with regard to the publication of D2.
7. D7 also states that the blend should further comprise hydrocarbon oil (paragraphs 51 and 52). Hence the non-inventive development of the device according to D7 (with regard to the publication of D2) would automatically include all the features of claim 2 in combination with claim 1. Hence the subject matter of claim 2 is rendered obvious by D7 with regard to the publication of D2.